

Perspectives

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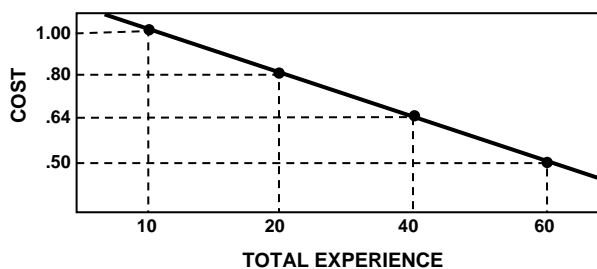
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The experience Curve - Reviewed

I. The Concept

“Costs of value added decline approximately 20 to 30 percent in real terms each time accumulated experience is doubled.”

The above relationship plotted on ratio paper (i.e., logarithmic coordinates) appears as follows:



If the growth rate is constant, then annual physical volume grows at the same rate as total experience. The approximate ratios are shown below.

Annual Growth Rate	Approximate Annual Cost Decline	Years to Double Experience
19 %	5 - 7 1/2 %	4
12 %	3 1/2 - 5 %	6
6 %	1 2/3 - 2 1/2 %	12
2 %	1/2 - 2/3 %	36

Such cost declines are after removing inflation. They continue indefinitely as long as the growth rate continues.

If the growth stops, costs continue to decline, but the rate of decline is cut in half each time the accumulated experience doubles.

Such cost declines do not occur automatically. They require management. In particular, added

investment is required in an amount commensurate with the marginal cost of capital.

The business effects of this relationship are summarized below:

- *Market Share*
Costs are inversely proportional to market share. High market share should produce low cost.
- *Growth*
Relative costs should improve if growth is faster than competitors.
- *Debt Capacity*
Relative debt capacity should increase with no loss of safety if market share increases.
- *Shared Experience*
Cost will decline proportionately faster or slower when cost elements are shared between more than one product.
- *Cost Control*
Cost declines are predictable and therefore should be the basis for cost control and management evaluation.
- *Product Design*
Choice of design element alternatives can be determined by whether initial experience is high or low compared to future volume expected.
- *Make or Buy*
Choice of make or buy should be determined by relative experience between your experience and supplier experience differential if you make.
- *Procurement Negotiation*
The value to the supplier of large scale procurement can be calculated. Also the rate of normal cost change for the supplier can be calculated.
- *Market Potential*
By comparing market elasticity with cost decline, the market potential can be approximated.

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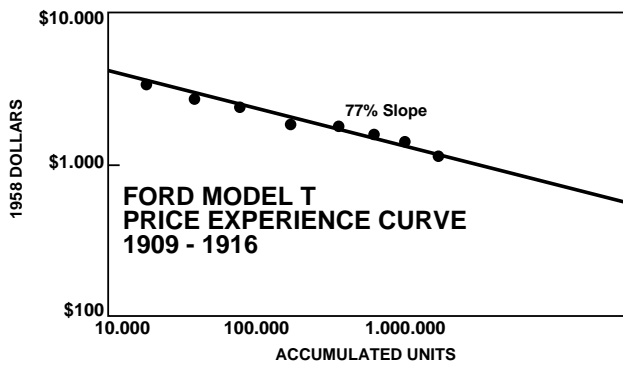
- *Product Line Breadth*

The total economic effect of product line extension can be evaluated by interaction of the experience and volume of combined cost elements.

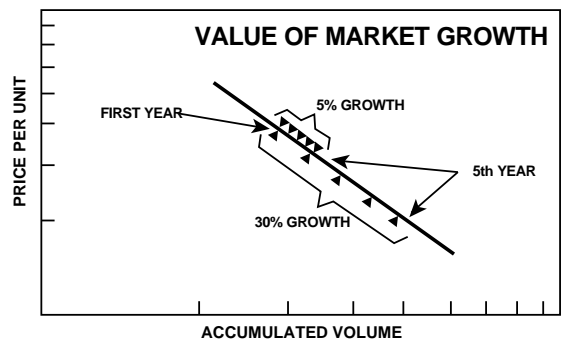
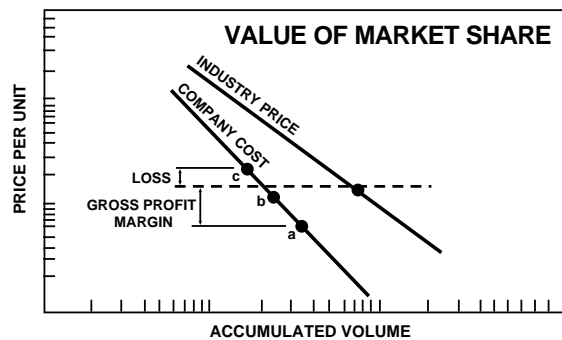
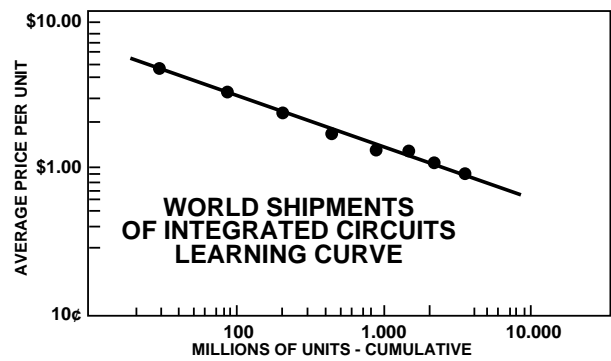
The experience curve cost effects are an observable fact. They can be confirmed by observation. The principal problems encountered in application are those of defining cost elements and in defining the measuring unit of experience.

Bruce D. Henderson

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Source: Automobile Manufacturers' Association



Source: Texas Instruments Incorporated, First Quarter and Stockholders Meeting Report, April 18, 1973.